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ABSTRACT

Kindergarten children from 17 Los Angeles, California, schools were the subjects in a research project designed to measure the effects of a structured prereading program. The program emphasized six types of reading skills: (1) listening for comprehension, (2) listening for auditory discrimination, (3) visual discrimination, (4) oral language skills, (5) motor perceptual skills, and (6) sound-symbol correspondence. The skills were taught in small groups and with independent activities according to specific instructions in teachers' manuals. The children were divided into matched experimental and control groups representing varied socioeconomic backgrounds. A wide variety of supplemental materials was used. Group reciting, creative story telling, music activities, games, and field trips were some of the activities used in teaching reading skills. Analysis of reading readiness test results showed that (1) experimental groups did significantly better than control groups, (2) girls as a group did significantly better than boys, (3) white children did significantly better than Mexican-American children who in turn did better than black children, and (4) experimental groups of Mexican-American children and black children did significantly better than white control groups. Tables and references are included. (AL)

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THE DEVELOPMENT OF PRE-READING SKILLS IN AN EXPERIMENTAL KINDERGARTEN PROGRAM

Basic to the current approaches in teaching reading is the assumption that success in beginning reading is crucial and that reading programs in the primary grades must be organized to assure this success. Evidence of the importance of achievement in initial reading instruction is the large number of research studies designed to find more effective ways of teaching beginning reading.

Further evidence of the emphasis on early stages of reading is found in the relatively recent number of research projects in reading readiness. Sesame Street, through the powerful teaching medium of television, has greatly increased the interest of the nation in pre-reading skills. This innovative program accepts the premise that the pre-kindergarten years are a period of substantial and significant intellectual development.[1] It has adopted the techniques and approaches of commerical television to help preschoolers develop skills necessary to a successful start in formal reading instruction.

RECENT PROJECTS IN READING READINESS

An increasing number of authorities in early childhood education have recognized that children's education can, and should, begin long before the traditional age of five or six. Many recent studies in readiness have been conducted with children of three or four in a structured learning situation.

RE 003 883

In research reported by Karnes in May, 1968, a traditional nursery school program was compared with a highly structured program focused on specific learning tasks designed to promote language and cognitive development. Four-year-olds were studied in order that follow-up evaluation could be coordinated with public schools in kindergarten. At the end of the experimental period, results of the Metropolitan Readiness Test showed superior performance by the experimental group in both reading readiness and numbers readiness. The University of Illinois researchers concluded that their findings illustrated the effectiveness of teaching specific content as well as school readiness.[2]

A four-year study conducted in New York State by di Lorenzo and Salter studied the effectiveness of an academic year preschool program for the disadvantaged on a longitudinal basis, pre-kindergarten through second grade. The project encompassed eight school districts with a basic curriculum approach which emphasized language and cognitive development, but which varied in comprehensiveness and methods of reading readiness instruction. At the end of the first two years of the study, it was found that the pre-kindergarten experience had proven beneficial for the subjects and that the most effective pre-kindergarten programs were those with the most specific structured cognitive activities.[3]

Much of the work in reading readiness has been done in the area of the culturally and economically deprived because these children lack the background with which middle or upper class children begin their formal education. Traditional preschool classes are not adequate to prepare the disadvantaged child to compete with children of more privileged environments. Thus the gains achieved by disadvantaged children in structured reading readiness programs contrast significantly with results of a California study by Prendergast, comparing the development of pre-reading skills in three

groups of upper-middle class children; a conventional day nursery class, a Montessori preschool class, and a non-nursery school group. The conventional school offered common enrichment experiences, while the Montessori class provided a structured program to develop skills through the use of special methods and materials. At the end of seven months, children were compared on development of perceptual motor skills and receptive language. In most areas evaluated, no significant differences were found among the three groups. The researcher attributed this primarily to the fact that the upper-middle class home environment encouraged the development of reading readiness skills without nursery school experience.[4]

At the kindergarten level, investigators at the University of Iowa studied the effectiveness of the Frostig perceptual motor method in developing reading readiness among 108 disadvantaged kindergarten children. The findings of approximately eight months of training in sensorimotor and visual perceptual exercises were reported by Alley in Exceptional Children, September, 1968. Results, as measured by the Marianne Frostig Developmental Test of Visual Perception and The Metropolitan Reading Readiness Test Form A, disclosed significant differences in favor of the experimental group.[5]

The "nature vs. nurture" controversy was considered by Bernabei in developing a reading readiness program in the Bucks County, Pennsylvania, schools. Do children grow into readiness, or is this rather a function of training and experience? Dr. Bernabei saw no immediate resolution of the controversy and undertook an interim, eclectic approach -- an Extended Reading Readiness Program organized to cover a longer period of time than the standard kindergarten treatment. The program devised pupil learning experiences and developed materials related to a curriculum of readiness skills, including pre-reading and mathematics. An evaluation of the pro-

gram after one year indicated significant differences in these skills between the interim class and the normal class.[6]

BACKGROUND AND OBJECTIVES OF THE RESEARCH

Over the past seven years, the writer has been engaged in research in the Los Angeles City Schools with approximately 500 first-grade children each year of varying ethnic and socio-economic backgrounds. The purpose of the research has been to experiment with a variety of materials and methods in teaching beginning reading to determine the effect upon the reading achievement of first-grade children. During these years, it has become increasingly apparent to the writer, the teachers, and the administrators in the series of studies that there were certain pre-reading skills necessary for children to succeed in reading. Through experimentation it was found that many children were not able to acquire proficiency in the reading readiness skills in the time which could be allotted in the first grade.

With this knowledge and with that from other reading readiness studies, the writer worked with teachers and administrators to develop a research design to teach these skills in a sequential, developmental order in six major areas: (1) listening for comprehension of content; (2) listening for auditory discrimination; (3) visual discrimination skills; (4) oral language skills; (5) motor-perceptual skills; (6) sound-symbol correspondence skills.

Through the process of grouping and the use of independent activities, the teacher taught specific lessons in the six areas to small groups of children. The skills of each lesson were developed in detail in the teacher's manual. These skills were taught and retaught, with sufficient practice periods, until an adequate level of proficiency was attained by the children. The objective of the study was to determine whether children

taught pre-reading skills in a structured program would attain significantly higher scores on a standardized test of reading readiness skills than those children who had not been involved in such a program.

PROCEDURES IN THE RESEARCH

For the experimental program, seventeen schools were selected to provide a cross-section of socio-economic levels representing ethnic catagories of black, Mexican-American, and other white children. Each experimental school was matched with a control school of similar ethnic origins, academic achievement, and socio-economic bachgrounds. The teachers in both the experimental and control schools were randomly selected.

The teachers in the experimental program were given a teacher's guide for the reading readiness lessons and materials to implement their teaching. The specific pre-reading skills were taught in the language-arts block of time in the kindergarten program. During the fall semester of the school year, these teachers met each week after school at a designated school building to receive additional materials and to discuss the use of these materials. At these workshop-type meetings, the teachers also made certain kinds of instructional aids, such as puppets and flannelboard activities, from patterns provided for them.

The teachers in the control schools followed the regular curriculum which they had been previously teaching.

MATERIALS AND TECHNIQUES IN THE RESEARCH

The teaching philosophy of the program was established upon the premise that the skills in the reading process are the same on the pre-reading level as at the highest stage of reading development. The chief differences are those of degree and refinement. Therefore the materials and techniques used in the research were developed to parallel the formal

reading instruction which the children would receive as they progressed through the primary grades.

The materials for the program included:

I. The Teacher's Manual.

Lesson plans were classified according to the six major areas of pre-reading skills, with the purpose of each lesson an emphasis upon improving one of these skills.

Each lesson plan included six sections: (1) Purpose; (2) Preparation; (3) Presentation; (4) Evaluation in Terms of the Purpose; (5) Pupil Practice Materials; (6) Additional Experiences. "Preparation" included materials needed in the presentation of the lesson. "Evaluation" established a quick check of what the children learned in terms of the purpose of the lesson. "Pupil Practice Materials" provided independent follow-up exercises for reinforcement of the skills taught in the lesson. At the close of the lesson, "Additional Experiences" suggested activities related to the same skill as the one for which the specific plan was given.

II. Picture cards.

Picture cards were used in a variety of ways: to stimulate imagination, to help in noting details, for picture reading, and for story telling. They served, too, as inspiration for painting, as motivation for dramatic play, and as stimulation for creative language, including stories dictated to the teacher.

III. Large flannelboard and pocket chart.

The large flannelboard and pocket chart were big enough to be seen by a group of children. They were used by either the teacher or a child. The flannelboard held cut-outs of story characters, ob-

jects, letters, and numbers. The pocket chart served as another illustrative aid.

IV. Individual flannelboard, pocket chart, and chalkboard.

There were small flannelboards, pocket charts, and chalkboards for each child in a group. Small groups were formed on the basis of specific needs. By having individual manipulative materials for each child in the group, the teacher made sure that every child was involved in the activity and learning, and had instant feed-back on individual progress.

V. Flannelboard cut-outs.

Cut-outs of the characters and objects from a story were used on the large flannelboard to illustrate a story when telling or retelling it. Other cut-outs were used in teaching about (1) shape, size, and color; (2) sight-sound-symbol correspondence, and (3) numerals and simple number concepts.

VI. Hand puppets.

Children are apt to lose much of their self-consciousness when they use hand puppets. They are intent upon manipulating the puppet appropriately and actually become the puppet character. In the experimental program, puppets were used to motivate oral language, both for retelling a story and for creating stories or conversation.

VII. Books.

The books for this program were chosen primarily because of their universal appeal to four, five and six-year-olds. Other criteria the books met were those of high literary quality, worthwhile illustrations, and appropriate format. The collection comprised a

variety of categories, including Mother Goose, poetry, fairy or folk tales, animal stories, an ABC book, and song books.

VIII. Phoneme boxes with small objects.

Each box contained small objects, most of whose names began with one of the consonants. In the same box were a few objects whose names began with a different consonant. Children said the names of the objects and decided which ones started like a certain word from a preprimer.

An overview of the reading readiness program is shown in the following outline which lists the six major skills and the teaching techniques employed in developing them:

I. Listening for comprehension of content.

The ability to listen often is taken for granted and therefore is seldom taught specifically. However, efficient listening must be learned and practiced. Because it is so important to speech, language, and reading, special attention was given to this area in the research program.

The purpose of the lessons in this part of the experimental curriculum centered around listening for pleasure and relaxation, comprehending what someone read or said, memorizing, remembering, and following directions. The children listened to poems, songs, and recordings with an awareness of mood; they listened as the teacher read or told a story to answer directed questions or to recall and tell parts of the story; they listened to and followed simple, and later, more complex directions.

II. Listening for auditory discrimination and development.

As a prelude to the aural discrimination of words and word

elements, the children had many directed listening experiences. After they learned to listen to the teacher, to each other, to music, and to sounds in their environment, the teacher began the development of the concepts of volume, pitch, direction, duration, sequence, accent, tempo, repetition and contrast, and distance. The teacher used a variety of recordings, tonal instruments, poems, jingles, and rhythms to develop these concepts.

III. Visual discrimination and development.

Observing and interpreting content. The interpretation of pictures and picture stories helped children to develop such skills as arranging items in sequence, making inferences, predicting outcomes, getting the main idea, and noting relevant details. Prior to this part of the program, the teachers organized school excursions and walking trips to give children opportunities to observe and become acquainted with the world beyond their immediate neighborhood. These firsthand experiences helped the children to understand concepts represented in the pictures and picture stories which otherwise might have had no meaning.

Visual imagery. Visual projection, or recognition of an object from it's description, was developed through such techniques as having the children guess the answers to riddles about familiar objects, paint pictures from vivid descriptions, or illustrate stories. Visual memory was practiced by the children in a variety of simple exercises, such as describing objects or scenes from memory or by locating, with eyes shut, familiar objects in the room.

Visual discrimination. The children were taught to note gross likenesses and differences before they made finer discriminations.

Picture-matching games and the comparing and contrasting of pictures, objects, and geometric forms were used to help the children make discriminations of size, shape, position, color, and small details. The development of these concepts laid a foundation for the further study of visual skills.

IV. Oral language skills.

The teachers provided experience in several areas related to oral expression: the ability to express ideas understandably to others; the ability to speak with the expression that conveys ideas, and with pleasing voice quality; the use of complete and well-structured sentences; the expansion of speaking and understanding vocabularies; the improvement of pronunciation and diction.

Varied and stimulating opportunities were provided for practice in oral expression. These ranged from spontaneous discussion of personal experiences to participation in creative story telling, recitation of poems, or choral speaking.

V. Motor-perceptual development.

Through directed lessons, the children learned to coordinate vision and movement, to become aware of and to manipulate the parts of their bodies, and to perceive positions of objects in relation to themselves. They learned body control through exercises, games, dances and the interpretation of music. Later, opportunities for the development of finer motor coordination were provided through activities in construction, cutting, pasting, tracing, and coloring. Eventually the children were ready for paper and pencil exercises that further refined hand-eye coordination.

VI. Sound-symbol correspondence.

In the experimental classes, sound-symbol correspondence was developed on levels of increasing difficulty. Practice was given to reinforce the learning of the sounds of the alphabet letters. Aural and visual recognition, as well as letter discrimination, were stressed by association of pure letter sounds with the corresponding names and symbols, using objects and pictures. In the last step in the development of this skill, the children learned to write the various letters of the alphabet in manuscript form.

The ability to count from one to ten was presented in the same sequence as letter recognition.

RESULTS OF THE RESEARCH

The Murphy-Durrell Reading Readiness Analysis was given to the seventeen experimental classes and the seventeen control classes at the end of the school year. With the data from this standardized test, a three-way analysis of variance was performed with sex, experimental-control, and ethnic group as the main effects. The scores from the five tests of the Murphy-Durrell Analysis were studied separately and in total. When the F-test was significant, it was followed by T-tests between the groups.

TABLE I

Mean Scores for Experimental and Control Groups on Murphy-Durrell Reading Readiness Analysis

Group	Phonemes Test		Letter Names Test		Learning Rate Test	Total
	Part 1	Part 2	Part 1	Part 2		
Experimental	15.92	18.57	20.51	21.71	10.80	87.50
Control	11.98	12.62	14.24	16.66	7.54	63.05

Table I shows that the experimental group achieved a higher score than

was achieved by the control group in the total test and also in all of the individual parts of the test.

TABLE II

Mean Scores by Sex
on Murphy-Durrell Reading Readiness Analysis

Group	Phonemes Test Part 1	Phonemes Test Part 2	Letter Names Test Part 1	Letter Names Test Part 2	Learning Rate Test	Total
Boys	13.72*	14.84	17.00*	18.35	8.64	72.56
Girls	14.19*	16.35	17.75*	20.01	9.70	77.99

* Differences on Phonemes Test Part 1 and Letter Names Test Part 1 not statistically significant; i.e., could be due to chance.

Table II indicates that the girls as a group achieved higher scores than the boys in the total test as well as in the individual parts of the test. However, this difference might have been due to chance in the first parts of the phoneme and letter names sections of the test.

TABLE III

Mean Scores for Ethnic Groups
on Murphy-Durrell Reading Readiness Analysis

Group	Phonemes Test Part 1	Phonemes Test Part 2	Letter Names Test Part 1	Letter Names Test Part 2	Learning Rate Test	Total
Black	13.19	14.43	16.78	18.62	8.20	71.21
Mexican-Amer.	13.45	14.91	16.57	18.45	8.87	72.24
Other White	15.21	17.45	18.78	20.49	10.43	82.38

Table III indicates that the children in the "other white" group scored higher on the total test and in all individual parts of the test than did the Mexican-American and the black children. While the Mexican-Americans achieved a higher over-all average than the black children, the latter group was slightly

higher in both parts of the Letter Names Test.

TABLE IV

Means for Total Score
on Murphy-Durrell Reading Readiness Analysis

	Black	Mexican-American	Other White
Boys	67.68	69.37	80.64
Girls	74.73	75.11	84.12
Total	71.21	72.24	82.38

	Black	Mexican-American	Other White
Experimental	82.68	84.57	95.27
Control	59.73	59.92	69.49
Total	71.21	72.24	82.38

	Boys	Girls	Total
Experimental	86.04	88.97	87.50
Control	59.09	67.00	63.05
Total	72.56	77.99	75.28

TABLE V

Analysis of Co-Variance for Total Scores
on Murphy-Durrell Reading Readiness Analysis

Source of Variation	Sum of Squares	D.F.	Mean Square	F	P
Experimental-Control	205120.56	1	205120.56	315.28	0.00
Sex	10089.19	1	10089.19	15.51	0.00
Ethnic	34876.29	2	17438.14	26.80	0.00
Exp.-Con. X Sex	2122.16	1	2122.16	3.26	0.07
Exp.-Con. X Ethnic	464.45	2	232.22	.36	0.70

(Table V, continued)

Sex X Ethnic	764.55	2	382.27	0.59	0.56
Exp.-Con. X Sex X Ethnic	714.53	2	357.27	0.55	0.58

Note: Column P gives the probability of differences occurring by chance. Normally, if P is equal to or less than .05, one can say that it would not happen by chance; i.e., it is significant.

Table IV shows the means for the total test separated according to the three main effects; experimental-control, sex, and ethnic group. Table V gives the analysis of co-variance for these three main effects and their possible combinations. In this analysis, a test was made to see if the means shown in Tables I, II, III, and IV were significantly different.

It was found that all three main effects showed significant differences:

1. The experimental groups achieved significantly higher scores than the control groups.
2. The girls, as a group, achieved significantly better than the boys in the study.
3. The "other white" group achieved significantly higher scores than the Mexican-American and the black groups. It should be pointed out that the experimental Mexican-American and black groups achieved considerably higher scores than the control group of "other white."

Table V also shows that combinations of the various possible groupings did not produce significant additional differences. That is, although the three main effects were significant, the interactions between the groups were not significant.

In summary, it may be said that the children in the kindergartens who were being taught in a structured, sequential program with appropriate materials achieved significantly more than the children in the regular kindergarten curriculum.

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